

AMENDMENTS TO THE CLAIMS

1. (Original) A method of rearranging sub-codes of two-dimensional quasi-complimentary turbo codes (QCTCs), comprising the steps of:

generating sub-code sets of QCTCs with given code rates; and

rearranging sub-codes of a sub-code set with a same or different code rate that is to be transmitted after a sub-code with a predetermined code rate.

2. (Currently Amended) The method of claim 1, wherein the sub-code is in a matrix format with elements representing puncturing and repetition positions.

3. (Currently Amended) The method of claim 1, wherein the rearranging step comprises the steps of:

generating new sub-code sets, a matrix for each sub-code in each new sub-code set having as many columns as the least common multiple of the numbers of columns of each sub-code in the sub-code sets; and

determining priority of the matrixes of sub-codes in each new sub-code set so that a matrix generated by combining matrixes from two of the new sub-code sets has a QCTC characteristic, a higher priority assigned to a more desirable QCTC characteristic, and rearranging the matrixes in each new sub-code according to the priority.

4. (Currently Amended) The method of claim 3, wherein the QCTC characteristic is that elements of the matrix represent ~~have~~ a uniform distribution of repetition and puncturing.

5. (Currently Amended) A method of rearranging matrixes of sub-codes of QCTCs, comprising the steps of:

generating sub-code sets of QCTCs corresponding to a plurality of given code rates, each sub-code of the sub-code set being a matrix format with elements representing repetition and puncturing positions;

generating new sub-code sets, a matrix of each sub-code in a new sub-code set having as many columns as a least common multiple of the numbers of columns of sub-codes in the sub-code sets;

determining priority of the matrixes of sub-codes in each new sub-code set so that a matrix generated by combining matrixes from two of the new sub-code sets has a QCTC characteristic, a higher priority assigned to a more desirable QCTC characteristic;

and

rearranging the matrixes in each new sub-code according to the priority.

6. (Currently Amended) A method of transmitting symbols using sub-codes of two-dimensional QCTCs, comprising the steps of:

rearranging sub-codes in sub-code sets of QCTCs, said sub-codes sets corresponding to a plurality of given code rates and storing the rearranged sub-codes;

selecting a QCTC with a code rate determined for transmission; and

transmitting symbols using a sub-code in the sub-code set of the selected QCTC.

7. (Currently Amended) The method of claim 6, wherein the rearranging step comprises the steps of:

generating new sub-code sets, a matrix of each sub-code of the new sub-code set having as many columns as the least common multiple of numbers of the columns of each sub-codes in the sub-code sets;

determining priority of the matrixes of sub-codes in each new sub-code set so that a matrix generated by combining matrixes from two of the new sub-code sets has a QCTC characteristic, a higher priority assigned to a more desirable QCTC characteristic;

and

rearranging the matrixes in each new sub-code according to the priority.

8. (Currently Amended) The method of claim 7, wherein the QCTC characteristic is that elements of a matrix represent ~~have~~ a uniform distribution of repetition and puncturing.

9 – 14 (Cancelled)

15. (Original) An apparatus for rearranging sub-codes of two-dimensional QCTCs, comprising:

a turbo encoder for encoding an input information bit stream with a predetermined code rate and generating code symbols;

a controller for rearranging sub-codes in sub-code sets of QCTCs corresponding to a plurality of given code rates and storing the rearranged sub-codes, selecting a QCTC with a code rate determined for transmission, and generating a puncturing and repetition control signal for a matrix following a matrix used for a previous transmission among the rearranged matrixes of the selected QCTC; and

a QCTC generator for generating a sub-code to be transmitted by puncturing and repeating the code symbols received from the turbo encoder according to the puncturing and repetition control signal.

16. (Original) The apparatus of claim 15, wherein the controller rearranges the matrixes in each sub-code set so that a matrix produced by combining matrixes from two different sub-code sets has a QCTC characteristic.

17. (Original) The apparatus of claim 16, wherein the QCTC characteristic is that elements of a matrix have a uniform distribution of repetition and puncturing.

18 – 20 (Cancelled)